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December 22, 1998

BY HAND

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W., TW-A325
Washington, D.C. 20554

Re: Reply Comments of Thomson Consumer Electronics Corporation in CS Docket No. 98-120

Dear Ms. Salas:

Enclosed for filing please find the original and nine (9) copies of the Reply Comments of Thomson Consumer Electronics Corporation in the above-referenced docket.

Please stamp and return to this office with the courier the enclosed extra copy of this filing designated for that purpose. Please direct any questions that you may have to the undersigned.

Respectfully submitted,

Lawrence R. Sidman

Lawrence R. Sidman

Enclosures

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List ABCDE

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Carriage of the Transmissions	)	
of Digital Television Broadcast Stations	)	CS Docket No. 98-120
	)	
Amendments to Part 76	)	
of the Commission's Rules	)	

REPLY COMMENTS OF THOMSON CONSUMER ELECTRONICS, INC.

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Electronics, Inc.

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REPLY COMMENTS OF THOMSON CONSUMER ELECTRONICS, INC.

I. INTRODUCTION AND SUMMARY.

Thomson Consumer Electronics Corporation ("Thomson") respectfully submits these reply comments in the above-captioned *Notice of Proposed Rulemaking ("NPRM" or "Notice")* concerning cable television system carriage of broadcasters' digital television ("DTV") transmissions.[1/]

A review of the voluminous record in this proceeding reveals a wide diversity of viewpoints and interests. That is to be expected in a proceeding that promises to impact such a broad cross-section of the industries that are charting the path to the digital television revolution. What is not to be expected and cannot be tolerated are rampant mischaracterizations regarding the technical capabilities of first generation DTV receivers. Such misleading and false statements inserted into the record by some cable and broadcast commenters in this proceeding are calculated

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1/ *Notice of Proposed Rulemaking* in CS Docket 98-120, 13 FCC Rcd 15092 (1998).

to create confusion and concern among consumers and to delay the DTV transition. They should be rejected forcefully by the Commission as irresponsible and injurious to the public interest.

Thomson wants to dispel any doubts that first generation DTV receivers will be anything but fully functional, delivering to consumers the highest level of DTV possible today. Thomson's receivers will not only receive, process, and display all digital broadcast signals off-air, but they will process and display any ATSC-compliant signal delivered by a cable operator, in addition to receiving DTV signals via direct broadcast satellite. Accordingly, the adoption of DTV receiver standards or federal mandates for A/B switches is completely unnecessary.

The record supports the transitional approach to cable compatibility endorsed by Thomson in its initial comments. The first principle of this transition should be an initial requirement that a cable operator provide consumers with an ATSC-compliant 8 VSB output for any digital signal carried on the cable system, so that cable consumers are not foreclosed by their cable operator from receiving all broadcast DTV signals and services, in their native quality and integrity. The agreement announced by CBS and Time Warner on December 9, 1998 and the November announcement by Cablevision of New York demonstrate the feasibility of this approach. This requirement should be immediately applicable and should be maintained until alternative methods of achieving cable-DTV compatibility are available to consumers. As detailed *infra*, cable operators face no meaningful technical or economic barrier to providing an 8 VSB output to the DTV receiver, and in fact cable operators are free to choose the method for delivering an 8 VSB output that best suits their needs. Although, multiple options for providing an 8 VSB output are available to cable operators, the Commission should not lose sight of the real goal in interoperability: the availability of true "cable-ready" DTV receivers. For consumers,

these receivers represent by far the most cost-effective and user-friendly approach to cable compatibility. In that regard, the IEEE 1394 interface standard is, at best, an interim, suboptimal solution which will still take years to implement fully because there is no agreement on a copy protection standard.

Finally, the Commission must ensure that no gatekeeper is permitted to deprive consumers of full access to the DTV revolution. Specifically, irrespective of its final determination on must-carry, the Commission should adopt a set of minimum technical and operational proscriptions that ensure that a broadcaster's digital signal retransmitted over a cable system is delivered to the consumer so as to be virtually indistinguishable -- in both video format, and bit stream delivered -- from the signal received at the cable system headend. These requirements will not unduly burden cable operators and are critical to ensuring a successful, *consumer driven* transition to digital television.

II. COMMENTERS' CLAIMS THAT DTV RECEIVERS WILL NOT MEET CONSUMERS' HIGH EXPECTATIONS IN TERMS OF PERFORMANCE AND RELIABLE OVER-THE-AIR RECEPTION OF DTV SIGNALS RING HOLLOW AND BY NO MEANS ESTABLISH A CREDIBLE RECORD UPON WHICH TO CONSIDER ADOPTING RECEIVER STANDARDS.

Sinclair, in its Comments, argues that over-the-air reception problems merit the Commission's adoption of digital television receiver standards "to ensure that consumers can reliably receive over-the-air DTV service."[2/] Sinclair specifically argues that the Commission should adopt a standard to govern receiver sensitivity levels to ensure adequate over-the-air

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[2/] Sinclair Comments at 3.

reception and should require that all receivers contain an A/B switch to enable selection from among multiple video sources.[3/]

Sinclair's calls for intrusive regulation by the FCC in these areas are simply a rehash of old arguments previously considered and rejected by the Commission based upon stale data and anecdotal information which has been refuted powerfully by the actual experience with DTV over-the-air reception since November 1, 1998.

All the data relied upon by Sinclair in its renewed call for DTV receiver standards are derived from early tests conducted at a few locations, including WHD-TV, the model DTV station that CEMA co-founded with broadcasters in Washington, DC, as a DTV test bed. These early digital test results were skewed by a number of factors in a testing environment, including, but not limited to, relatively low power levels for transmission and suboptimum transmitting antenna heights. Anomalies derived from these tests cannot serve as a basis for mandating performance standards for DTV receivers. The most emphatic rebuttal to Sinclair's argument are the reports of remarkably clear reception of DTV signals following the commencement of DTV broadcasting by 42 stations on November 1, 1998. Even in markets plagued with the most severe forms of multipath interference, such as New York City, the experience with off-air reception has been successful. As full power digital stations go on the air and the new digital television receivers go into use in many hundreds of locations around the country, an abundant body of new data produced under real world conditions will become available. Consumer reaction will be swift and clear, and equipment manufacturers will make their judgments based upon the views of those

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[3/] Sinclair urges performance standards for antennas and digital set-top boxes. *Id.* at 8.

consumers. The competitive marketplace will ensure that any deficiency in any manufacturer's receivers will be corrected quickly, without federally mandated receiver standards.

On multiple occasions, the Commission consistently and correctly has held that competitive market forces will ensure that DTV receivers perform adequately, and that television manufacturers are in the best position to ensure that their products meet and exceed consumer expectations. The specific issue of receiver sensitivity was addressed, decided, and disposed of in the Commission's February 23, 1998 reconsideration order in MM Docket No. 87-268, wherein the Commission correctly affirmed its decision to rely upon marketplace forces rather than to adopt receiver standards.[4/] For the reasons discussed above, this was a correct decision. The record is devoid of any reason why it should be changed now.

Similarly, the inclusion of A/B switches is a decision that should be left to the marketplace. There is absolutely no need for a government mandate for A/B switches. Many television receivers in fact have multiple inputs of various types that are selected by remote control. Presumably, other manufacturers will be offering their own versions of remote controls or other devices which provide switching capability among broadcast, cable, VCR and other media. There will be numerous variations in the sizes and features of digital television sets, and devices which provide the functionality of A/B switches. In addition, inexpensive manual A/B switches are readily available. There is absolutely no basis for a Commission requirement regarding A/B switches where there is abundant evidence that a free market, competitive response is already meeting any need that may exist and is doing so in a manner that provides more choices

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[4/] See *Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order*, MM Docket No. 87-268, FCC 98-24 at ¶¶ 168-171 (rel. Feb. 23, 1998), further reconsideration pending.

and better performance to consumers than would result from regulatory action. Sinclair's plea for an A/B switch rule should be dismissed.

III. CONCERNS REGARDING DTV RECEIVER COMPATIBILITY WITH CABLE SYSTEMS ARE BEST ADDRESSED BY ADOPTION OF A TRANSITIONAL APPROACH.

a. Thomson's DTV Receivers Will Be Capable of Receiving DTV Signals Via Cable So Long as The Cable Operator Provides an 8 VSB Output to the Receiver.

A review of the extensive record developed in this proceeding reveals a great deal of misinformation or misunderstanding regarding the interoperability of DTV receivers with cable systems. Specifically, a number of commenters in the cable industry have claimed that consumer electronics manufacturers are poised to market DTV receivers that are incapable of displaying DTV signals carried over cable or other systems.[5/] The general tenor of these comments is reflected in the following statement submitted by the Cable Telecommunications Association ("CATA"):

> [T]he consumer electronics industry, one of the main proponents of this new form of television . . . has chosen to design the first generation of digital television receivers without even the capability to receive digital signals from cable systems or any other source![6/]

Nothing could be further from the truth. At best, statements such as this reveal a gross misunderstanding of the current state of technology in DTV receivers. At worst, they are an attempt to mislead the Commission. Consumer electronics manufacturers, who operate in one of

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[5/] *See* Comments of Cable Telecommunications Association at 9; Comments of Adelphia Communications Corporation, *et al.* at 23; Comments of CableVision at 8.

[6/] Comments of Cable Telecommunications Association at 15-16.

the most demanding and sophisticated consumer marketplaces for any product, have every incentive to introduce DTV receivers that function at maximum performance regardless of whether the DTV signal is received over-the-air, via cable or, in the case of Thomson's DTV receivers, via satellite.[7/]

The only scenario under which the initial generations of Thomson DTV receivers will not be able to receive or display broadcasters' DTV signals transmitted over cable is one in which the cable operator does not deliver an ATSC-compliant 8 VSB broadcast signal as an input to the DTV receiver. This limitation is in no way caused by any deficiency on the part of Thomson's receivers, all of which are designed in strict conformance with a formally established, inter-industry developed, and FCC-mandated DTV transmission standard (a standard which the cable industry participated in establishing). While a cable operator's decision to select another modulation system (*e.g.*, QAM) may be understood in terms of self-interested technical and economic considerations, that decision should not come at the expense of cable consumers losing access to broadcasters' DTV signals.

A number of commenters acknowledge that there are multiple options available to cable operators to deliver ATSC-compliant signals to consumers,[8/] and at least two major cable

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[7/] In fact, Thomson is an industry leader in multiple source reception of DTV, and will put in the hands of consumers products that are capable of receiving DTV and HDTV signals either over-the-air, or via cable (see discussion *infra)* or satellite. Consumers purchasing either Thomson's 61" or 55" rear projection HDTV receivers will be able to receive HDTV programming via direct broadcast satellite service from providers such as DIRECTV and USSB, without the need to purchase additional equipment.

[8/] *See* Comments of Harris Corporation at 8; Comments of Consumer Electronics Manufacturers Association ("CEMA") at 21-24; Comments of Philips Electronics North America Corporation at 11-13; Comments of the Association for Maximum Service Television ("MSTV") at note 106.

operators recently announced that they intended to do just that. CableVision, a large New York area MSO, recently announced in early November, 1998 its plans to transmit full HDTV broadcasts of Madison Square Garden sporting events using the ATSC-compliant 8 VSB modulation.[9/] As a result, customers in CableVision's New York service area who purchase DTV receivers will be able to immediately connect their new digital television receivers, right out of the box, to their cable system and instantly enjoy full HDTV on this channel without experiencing any so-called compatibility problems whatsoever. Just two weeks ago, Time Warner and CBS announced that Time Warner would be carrying the broadcast signals of all CBS owned and operated stations, using 8 VSB modulation, including CBS's transmission of certain NFL games in 1080-i, HDTV format.[10/]

These announcements show the way for other cable operators to make commitments which will ensure that cable subscribers are not disenfranchised from receiving DTV broadcast signals in the early phase of the transition to DTV. The Commission should encourage other cable operators to follow suit. Cable consumers should be guaranteed that their cable operators will not disable the functionality of their DTV. This result should be mandated because it is so basic to the success of the DTV transition.

[9/] *See,* Glen Dickson, *MSG Goes Hi-Def,* BROADCASTING & CABLE, November 2, 1998, at 43 (reporting on CableVision's recently announced plans to transmit full HDTV broadcasts of Madison Square Garden sporting events using the ATSC-compliant 8 VSB modulation);

[10/] *See* Lawrie Mifflin, *Time Warner and CBS in Pact on Digital TV,* NEW YORK TIMES, December 12, 1998, at C2; *See also, TCI Says Antennas Are Answer for Customer's DTV,* COMMUNICATIONS DAILY, December 10, 1998, at 3 (quoting a Time Warner spokesman as saying that Time Warner "will pass through CBS signals at original VSB modulation...").

b. The Record Established on Cable Compatibility Issues Cries Out For The Transitional Approach Urged by Thomson and Others.

Thomson strongly believes that the cable compatibility issues raised in the *NPRM* cry out for a transitional approach that ensures, above all else, that cable consumers have access to broadcaster's DTV signals in their full quality and integrity *at every phase of the transition.* Indeed, the imposition of virtually any DTV must carry requirement would be meaningless if cable incompatibility stands as a technical barrier to consumer access to broadcasters' DTV signals. To implement its suggested transitional approach, Thomson has urged the Commission: (1) to require, upon the initiation of DTV service this fall, cable operators to provide an ATSC-compliant (*i.e.,* 8 VSB) output for input to a DTV receiver, and to extend such an obligation until there is a reasonable and universally available alternative for consumers to obtain cable-DTV receiver compatibility (a requirement supported by several other commenters[11/]); (2) not to rely on the 1394 interface as a panacea for interoperability; and (3) to do everything possible to encourage the development, as rapidly as possible, of industry standards that will allow consumer electronics manufacturers to produce "cable-ready" DTV receivers, which represent by far the most technically elegant and consumer-friendly approach to cable compatibility. Thomson believes the record supports such an approach.

1. Cable Operators Face No Significant Barriers to Providing an 8 VSB Output to the Digital Receiver.

The ability of a cable operator to provide an ATSC-compliant 8 VSB output of a broadcaster's DTV signal can be accomplished with little or no technical burden to the cable operator. Such is the case whether the cable operator chooses to take the broadcaster's 8 VSB

11/ *See* Comments of CEMA at 22, Philips at 7, Zenith at 3, and Harris at 8.

signal received at the headend and pass it through the system to the receiver, untouched; or if the cable operator chooses to remodulate the 8 VSB signal to QAM at the headend, allowing a set-top box to remodulate the signal back to 8 VSB for input to the receiver. In fact, the only barrier to a cable operator's providing an 8 VSB output is a self-imposed one in which the cable operator determines that its own narrow business interests take priority over the needs of consumers to access DTV signals in their full quality and integrity. The Commission must reject this scenario, which would effectively take the important marketplace decisions that will ultimately drive the DTV transition out of the hands of consumers and into the hands of individual cable operators.

As highlighted by the following quote from ALTV, a requirement that cable operators provide a pure pass through of a broadcaster's 8 VSB signal, as described in the Commission's *NPRM*,[12/] will not present technical obstacles to cable operators:

> ALTV is aware of no technical impediment to transmission of DTV signals on analog systems. The system would be required to provide no more than the raw DTV signal as it was broadcast to its subscribers. No investment in extensive processing equipment or new set top boxes would appear necessary. Nonetheless, a subscriber who wished to purchase a DTV receiver could do so with confidence that the local cable system would not interdict local television stations' DTV signals. As long as the DTV receiver could process the off-air signal, the subscriber could enter the world of DTV.[13/]

Indeed, CableVision's announced plans to provide consumers with HDTV programming "using broadcasters' 8 VSB modulation,"[14/] confirm that providing an 8 VSB output to the

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[12/] *NPRM* at ¶ 26.

[13/] Comments of ALTV at 49.

[14/] *See* Glen Dickson, *supra*.

consumer via a pass through is both technically feasible and not prohibitively expensive. Moreover, where technical barriers to an 8 VSB pass through on a cable system that otherwise employs QAM do exist (such as with certain set-top boxes[15]), such barriers can be overcome without imposing either significant expense on the cable operator or disruption to its subscribers. Cable operators should be willing to make such accommodations to ensure the happiness of what they themselves describe as "some of their best customers."[16]

Under an alternative approach to the pass through method of providing an 8 VSB output, a cable operator could convert the broadcaster's VSB signal to QAM at the headend for efficient transmission through the cable facility, with remodulation back to 8 VSB taking place in the set-top box for reception by the DTV receiver. Thomson recognizes that such a scheme might be more attractive to those cable operators who want to preserve their ability to employ QAM.[17] As with the pass through scenario, the conversion/remodulation of the DTV signal from VSB to QAM and back to VSB is technically feasible[18] at a relatively reasonable cost.[19] In fact,

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[15] BellSouth Interactive Media notes that its digital set-top boxes are incapable of passing through or processing any VSB signal. Comments of BellSouth Interactive Services at 19-20.

[16] *See* Collins testimony ("[T]hose customers who are willing to invest in a high definition television receiver probably are some of our best customers.")

[17] *See e.g.* Comments of MediaOne group, Inc. at 12 ("...it only makes sense that cable operators prefer to remodulate digital signals using QAM, rather than VSB, in order to achieve maximum transmission efficiencies over their cable network.")

[18] *See* Reply Comments of BellSouth Interactive Media at 8.

[19] BellSouth Interactive Media states in its Reply Comments that the conversion/remodulation of DTV signals would "[require the addition] of a wideband VSB modulator to each of its STBs, an extremely expensive process..." Comments of BellSouth Interactive Media at 8. In fact, such a claim is overstated, since wideband VSB modulators are relatively inexpensive.

manufacturers of some set-top boxes have indicated they may be building such a capability into their digital cable set-top boxes.[20] CEMA also shows that remodulation, like the pure pass through discussed *supra*, imposes no great technical demands on cable operators: "CEMA has published a voluntary standard (EIS-762) to connect devices to DTV receivers. The interface can be used to translate a valid ATSC transport stream from any source (such as could be obtained from a QAM RF signal) and modulate it into 8 VSB for delivery to the DTV receiver input."[21]

Moreover, such an approach also would preserve the original integrity and quality of the DTV signal,[22] and, as CEMA points out, converting the over-the-air 8 VSB signal to 256 QAM or 16 VSB allows a cable operator to reap the benefit of efficient signal compression -- utilizing only 3 MHZ of bandwidth to transmit a 6 MHZ signal -- while preserving the integrity of the broadcast signal and the full functionality of digital television sets.[23]

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[20] *See, e.g.*, Testimony of Joseph J. Collins, Chairman & CEO, Time Warner Cable, before the House Subcommittee on Telecommunications, Trade and Consumer Protection, U.S. House of Representatives (April 23, 1998) ("Collins Testimony"). ("[Time Warner's] Pegasus box is designed to be compatible with the delivery of both broadcast and cable high definition programming even where the broadcaster uses VSB modulation rather than the far more efficient QAM modulation utilized by cable operators.")

[21] *See* Comments of CEMA at 22.

[22] *See* Comments of MediaOne at 12. ("[A]ny RF modulation format conversion from VSB to QAM is totally transparent to broadcasters' underlying digital video content (including transmission of enhanced program information, such as baseball scores). The conversion from VSB to QAM causes no degradation of broadcast video quality; rather the same digital signal quality which broadcasters deliver to the cable headend will be received by cable subscribers with digital television receivers."). Though not discussed here, the converse of MediaOne's assertion -- *i.e*, the remodulation of a signal from QAM to VSB -- also causes no material degradation of the DTV signal.

[23] *See* Comments of CEMA at 22.

As stated in its original Comments in this proceeding, Thomson believes that the method by which a cable operator decides to deliver an 8 VSB output to the consumer should be left to the discretion of the individual cable operator. However, *whether* a cable operator delivers an 8 VSB output of DTV signals to consumers should not be a matter of choice for the initial phase of the DTV transition. Until such time as there exists universally available alternatives to an 8 VSB output -- such as the IEEE 1394 firewire *with copy protection*, or more preferably, cable-ready DTV receivers designed in accordance with standards and specifications agreed to by the cable and consumer electronics industries -- the FCC should impose an obligation to provide an 8 VSB output to DTV receivers. The record in this proceeding clearly reveals that cable retransmission of ATSC-compliant broadcast DTV signals is indispensable to a smooth transition to digital television. Cable operators' narrow and short-term economic concerns are vastly outweighed by the public interest benefit that will be achieved by a rapid, consumer-friendly DTV transition.

2. The IEEE 1394 Interface Standard Requires Agreement on a Copy Protection Standard, and, Even Then, Is Not the Optimum Solution for Consumers.

As discussed in its earlier comments, Thomson cautions the Commission not to view adoption of a 1394 interface as a "panacea" to cable compatibility with DTV. Several commenters, including broadcasters and other entities intimately familiar with consumers' preferences in home electronics purchases, correctly note, as Thomson has, that a 1394-based approach to compatibility, by its very definition, prolongs the need for consumers to depend upon and pay for additional set-top equipment to receive DTV signals,[24] and, residually, may give monopoly cable operators -- not the consumer -- undue control in determining what data

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[24] *See* Comments of MSTV at 42; Philips at 13; and Circuit City at 9.

(electronic program guides ("EPGs"), for instance) enter the home.[25] Most importantly, these commenters agree that the Commission should avoid latching on to solutions that may soon become obsolete, particularly when more technically elegant and consumer-friendly options -- notably "cable-ready" DTV receivers -- are available.[26]

Thomson recognizes that CEMA and NCTA, as anticipated, have completed work on the necessary extensions to the baseline 1394 specification.[27] While Thomson has supported these efforts, it has serious reservations about the so-called "5C" copy protection standard, referenced in the CEMA-NCTA letter, particularly with respect to that proposal's embedded security feature. Such a feature would effectively allow any cable company or movie studio to disable a television receiver or VCR through its cable TV connection. While possibly superficially attractive to some in the video content business, such an approach would greatly disserve consumers, who would likely have no idea what caused the deactivation of their DTV product, and who, once they realize what caused the deactivation, would be required, somehow, to have their receiver or other device professionally retrofitted with new embedded security (which would have no lesser chance of being hacked than the first). Moreover, the 5C proposal does not specify a mechanism to prevent multiple generations of copies (*i.e.*, beyond the first "fair use" copy). As a result, any copies of a program made by a consumer might be duplicated by others, including video pirates.

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[25] *See* Comments of MSTV at 42.

[26] *See* discussion *infra* on industry standards for cable-ready DTV receiver standards.

[27] *See* Letter to FCC Chairman Kennard from Decker Anstrom (NCTA) and Gary Shapiro (CEMA) (October 30, 1998) ("CEMA-NCTA Letter").

Recently, Thomson Consumer Electronics and Zenith Electronics Corporation have proposed jointly a digital copy protection method -- "XCA" for Extended Conditional Access -- which allows for copy protection of home recordings on both one-way and two-way interfaces and, by using a renewable "smart-card" security system, avoids the confusion and frustration that would be visited upon consumers under the 5C's embedded security model, should the security become "hacked." Moreover, because the XCA method will allow copies only of encrypted data, with decryption occurring just in the display device, only original content or first generation copies would be displayed, thus improving upon the 5C approach's lack of protection for multiple copies. XCA is easily and inexpensively implemented for all digital interfaces (including the EIA-762 RF Remodulator Standard and the IEEE 1394 Interface) that will be used between digital television sets and other digital devices, including digital VCRs, DVD players, and cable TV equipment in the near future.

Thomson again urges the Commission to view the 1394 interface, as Chairman Kennard has noted, as but one approach to cable compatibility with DTV. And while it is an approach that deserves the continued best efforts by all involved parties to complete, its adoption and use only perpetuates consumer dependence upon a set-top box and tethers DTV to a technology that soon should be replaced by the availability of new and far more consumer-friendly solutions.

3. Commenters Agree: The Adoption of Standards for Cable-Ready DTV Receivers Represents The Most Consumer Friendly and Cost-Effective Pathway Toward Cable Compatibility.

While many of the principal commenters who discuss the NPRM's cable compatibility issues express varying degrees of confidence or concern with such compatibility approaches as the 1394 interface and the component video interface, at the end of the day, each of these parties

agree on one thing: the availability of truly "cable-ready" DTV receivers represents the most consumer-friendly approach to DTV-cable compatibility. Indeed, FCC Chairman Kennard echoed this very sentiment in a recent speech before the Digital Television Summit Meeting in Washington, D.C.:

> I am aware, however, that agreement on the so-called IEEE 1394 standard is only one part of the solution to DTV compatibility . . . [P]rogress on defining interoperability standards for digital cable ready sets must be made, so that consumers have the choice not to have a separate set-top box.[28/]

The need for the Commission to focus much greater attention on the ongoing negotiations for industry-adopted standards for cable-ready DTV receivers has also been recognized by multiple commenters, including consumer electronics manufacturers, retailers, broadcasters and a cable programmer.[29/] And while the record reveals some variation as to how such a goal should be accomplished, these parties generally agree with Thomson's position that the availability of cable-ready DTV receivers, from the consumer's perspective, represents the most cost-effective and user-friendly approach to cable-DTV compatibility. Additionally, some, including CEMA, recognize that cable-ready DTV receivers also will protect DTV receivers from having their premium features and functions disabled or inhibited by cable companies.[30/] Like cable-ready receivers in the marketplace today, cable-ready DTV receivers will provide cable consumers with

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[28/] Remarks of William E. Kennard Chairman, Federal Communications Commission to the "Dawn of Digital Television" Summit Meeting; Washington, D.C., November 16, 1998 (As prepared for delivery).

[29/] *See* Comments of Philips at 13; Circuit City at 8; CEMA at 21; NAB at Attachment G, Note 1; MSTV at 3; MECA at 4; HBO/TBS at 33; and Sinclair at 3.

[30/] *See* CEMA at 19.

the most user-friendly and technically elegant way to access broadcasters' DTV signals -- including all available over-the-air DTV services -- without the need to pay for and attach additional devices.

As Thomson has noted in its earlier comments, the best use of the Commission's time -- at present -- would be to do everything in its power to *encourage* the consumer electronics and cable industries to move forward as swiftly as possible -- cooperatively with the cable industry and within and among accepted, open and transparent industry standard-setting and technical bodies -- toward the adoption of technical standards for cable-ready DTV receivers. If, however, private standards setting mechanisms fail to yield tangible results within one year (*i.e.*, December 1999), the Commission should commence a proceeding on digital cable-ready technical and operational requirements. Once adopted, the Commission should require that DTV signals carried by cable operators are transmitted to their subscribers in a manner consistent with these standards.

IV. THE RECORD SUPPORTS FCC ACTION TO ENSURE CABLE CONSUMERS HAVE ACCESS TO FULL QUALITY DTV SIGNALS AND SERVICES REGARDLESS OF WHAT IT DOES ON MUST CARRY.

As discussed above, Thomson believes that cable carriage of broadcasters' digital *and* analog signals during the transition period will be critical to encouraging the development of a mass consumer market for DTV programming and equipment, which are *sine qua non* to hastening the transition to DTV and the return of broadcasters' analog spectrum. Regardless, however, of whether the Commission adopts an "Immediate Carriage" approach, as suggested by

most broadcasters;[31] a "Phased-In" approach, as proposed by MSTV and others;[32] the "Either/Or" approach, as suggested by some;[33] or no transitional (and/or post-transitional) carriage obligation at all, as most cable entities have urged;[34] it is clear from the record of this proceeding that at least *some* cable operators will be carrying at least *some* broadcasters' DTV signals.[35] These signals -- however many there may be, and whether they are available pursuant to a retransmission consent agreement or a formal must carry requirement -- must be received by cable consumers in a quality and robustness equal to that of the signal received over-the-air. The obligation of a cable operator to deliver to its subscribers a broadcaster's DTV signal in its

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[31] *See* Comments of ALTV at 7; CEMA at 3; Cordillera Communications at 4; Corporation for General Trade Inc. at ii; Entravision Holdings, Inc. at 2; Golden Orange Broadcasting at 2; Granite Broadcasting at 3; Harris at 1; KSLS/KHLS, Inc. at 1; Lee Enterprises at 2; Marantha at 6; Morgan Murphy and Cosmos Broadcasting at i; Named State Broadcasters at 2; NAB at iii; Paxson at 2; Public Broadcasters at iii; Retlaw Enterprises at 4; Shockley Communications at 2; Sinclair at 3; Sony at 3; Station Representatives Association at 3; Board of Governors at 3; and Zenith at 2.

[32] *See* Comments of Broadcast Group at 25; Capitol Broadcasting at 3; Chris-Craft/United Group at 4; MSTV at 52; Pappas Telecasting at 24 (for Top 25 markets); Pikes Peak Broadcasting at 7 (for Top 25 markets); and Trinity Broadcasting at 5.

[33] *See* Comments of Pegasus Communications at 2; Paxson at 21 (for channel locked systems); and UCC et. al. at 9.

[34] *See* Comments of A&E at 15; Adelphia at 2; America's Health Network, et al. at 36; Ameritech New Media at 3; Armstrong Holdings and Inter Mountain Cable at 25; Atlanta Interfaith Broadcasters at 1; CATA at i; CableVision Systems Corporation at 5; Citizens for C-Span at 2; Court TV at 4; Discovery Communications at iii; Professor Meade Emory at 2; Encore Media Group at 4; GTE at 6; HBO and TBS at 2; Home and Garden TV and TV Food Network at 7; International Channel at 3; Law Firm of John D. Pellegrin at 1; Lifetime Entertainment Services at iii; MediaOne Group, Inc. at 7; Michigan Government Television at 1; Microsoft at 9; NCTA at 2; Ovation at 6; Pappas Telecasting at 25; Pikes Peak Broadcasting at 7; SCBA at 2; TCI at 2; Time Warner at 3; The Weather Channel at 5; Wisdom Network at 1; ZDTV at 5.

[35] *See,* Comments of BellSouth Interactive Services at 26; CATA at 32; Ameritech New Media at 15; MediaOne at 7; and NCTA at 39.

original quality and integrity does not, need not and should not depend upon whether or not that cable operator is necessarily *required* to carry the DTV signal. This point is well articulated by MSTV, which notes that numerous technical issues addressed in the *NPRM*, including material non-degradation and carriage of the entire DTV signal, should rightfully be addressed regardless of what must carry formulation the Commission ultimately adopts.[36] Moreover, nothing in the record supports the need or advisability of inextricably linking resolution of these technical issues with all of the legal and other issues addressed in must carry. If a broadcaster's signal is carried, it should be carried properly and the consumer should not be deprived of a full quality signal by his or her cable operator.

Accordingly, Thomson again urges the Commission to adopt, either as part of a must carry regime or through the adoption of independent rules, a set of minimum requirements designed to ensure that every DTV signal received by a consumer over a cable system is identical in terms of quality and completeness to the same signal were it received over-the-air. Such proscriptions, by their terms, should prohibit: (1) alteration or removal of any data (including PSIP, User Data and program-related data such as EPG services) carried in the entire 6 MHZ

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[36] Comments of MSTV at 20 ("The Commission should settle the cable carriage issues [such as material non-degradation, and carriage of the primary video and other parts of the signal, including electronic program guides] that are not dependent upon particular must carry requirements....Resolution of these issues is crucial if broadcasters are to negotiate effectively with networks and syndicators and to develop business plans for use of the DTV channel. Broadcasters must know with some certainty what rights they have under law and what they will need to bargain for.") *See also* Comments of Philips at 10 (which urge the Commission to prohibit material degradation of DTV signals and to require carriage of the entire 6 MHZ DTV channel "...either based on a cable operator's must carry obligations or on a set of minimal technical standards...").

DTV channel; and (2) material degradation of any kind, including down conversion of an HDTV signal to any lower resolution format,[37] by any party.[38]

a. The Record Overwhelmingly Supports Commission Action to Ensure That Cable Consumers Have Unimpeded Access to Broadcaster's DTV Signals in Their Original Quality and Integrity.

Nearly every non-cable entity in this proceeding -- including broadcasters[39], consumer electronics manufacturers[40] retailers,[41] and others[42] -- address, and in many cases place substantial weight upon, the importance of ensuring that consumers receive digital signals and programming services in their original quality and without material degradation. Each of these commenters has a major stake in the success of DTV, particularly in ensuring that the products

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[37] Such a prohibition would necessarily prohibit the down conversion of a 1080-i HDTV format to a 720-p HDTV format.

[38] Thomson opposes granting broadcasters the right to waive these signal degradation protections as part of a retransmission consent agreement. These protections, after all, appropriately would be intended to protect the ability of consumers to receive these signals and to have their DTV products function to their fullest capability.

[39] *See* Comments of ALTV at 62; Barry Telecommunications at 5; Broadcast Group at 19; Capitol Broadcasting at 4; Chris-Craft/United Group at 4; Cordillera at 4; Corporation for General Trade at 13; Entravision at 10; Golden Orange Broadcasting at 6; Granite Broadcasting at 9; KSLS/KHLS at 2; Lee Enterprises at 6; Maranatha at 6; Morgan Murphy and Cosmos Broadcasting at 10; MSTV at 28; NAB at 40; NBC at 4; NASA at 2; Named State Broadcasters at 5; Pappas Telecasting at 20; Paxson at 29; Pegasus Communications at 6; Pikes Peak Broadcasting at 11; Public Broadcasters at 44; Retlaw Enterprises at 4; Shockley Communications at 4; Sinclair at Note 5; Station Representatives Association at 8; and UPN Affiliates at 4.

[40] *See* Comments of Philips at 2; CEMA at 13; Harris at 7; Sony at 8; MECA at 10; and Zenith at 2.

[41] *See* Comments of Circuit City at 6.

[42] *See* Comments of Gemstar/Starsight at 18; and National Datacast at 2.

they present to consumers -- whether HDTV programming, program-related services such as electronic program guides, or high quality, multi-functional digital television receivers -- perform up to their maximum capabilities, without degradation or diminution by a gatekeeper. It almost goes without saying: when a consumer *expects* to be able to choose from an array of free over-the-air DTV services, including broadcaster-delivered electronic program guides or interactive services, that consumer must not be denied that choice, either by a cable operator or any other video programming distributor.[43/] When a consumer invests several thousand dollars in an HDTV receiver *expecting* it to display broadcasters' and cable programmers' 1080-i signals in their full quality and clarity, no entity should be permitted to "dumb down" that signal to a lower format or resolution.

With very few exceptions,[44/] cable industry commenters have chosen to remain silent on the issue of material degradation of DTV signals, focusing their comments exclusively on whether they should be required to carry DTV under some form of must carry, but leaving the

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[43/] Several broadcasters, while rightly urging the Commission to prohibit material degradation by cable operators on a unilateral basis on the one hand, support giving cable operators the right to materially degrade their DTV signal (such as the down conversion of an HDTV signal to a lower resolution format), so long as such degradation takes place with the broadcaster's consent. *See, e.g.*, Comments of MSTV at 64; Broadcast Group at Note 35; MSTV at 31-32. Under such an arrangement, broadcasters, most likely the larger networks, could receive consideration of some form (additional channels for affiliated cable programming, for instance) in return for allowing their signal to be downconverted. While such flexibility may be desirable for the broadcaster and the cable operator, it would be extremely *undesirable* for consumers, particularly those purchasing high end, 1080-i HDTV receivers. As Thomson has argued throughout this proceeding, the transition to DTV will not be successful if it is not, above all, as consumer friendly as possible, *i.e.*, that consumers have access to all of the benefits of DTV -- including HDTV signals in their intended quality, regardless of whether they receive DTV services over the air, via cable or some other distribution method.

[44/] *See* Comments of HBO/TBS at 6; and Pegasus (which owns one cable system in Puerto Rico) at 6.

Commission with an unacceptably "low-res" picture of *how* and in *what quality* they will deliver these signals to consumers when they are carried.[45] (In fact, in the only instance where a cable operator addresses, directly, the issue of material degradation, it urges the Commission to sanction such degradation.[46]) The cable industry's silence on this extremely important issue is truly regrettable, and Thomson laments the opportunity cable operators appear to have forsaken to assure the Commission that cable consumers will be able to enjoy all of the benefits -- including full quality 1080-i HDTV and the plethora of DTV data services -- that will be available to them, and that their investment in HDTV receivers will not be devalued due to the downgrading of HDTV signals to a lower resolution. Such silence only further underscores the need for the Commission to act decisively to give America's 70 million cable consumers the certainty that their cable company will not act as a barrier to their full enjoyment of DTV products and services, and that the consumer will be able to make the transition to DTV in a manner that suits *his or her own* preferences and budget.

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[45] Time-Warner, for example, points to recent efforts to upgrade the capacity of its systems to accommodate "digital applications," predicts that "these applications will undoubtedly include HDTV," but stops short of committing not to degrade HDTV signals to a lower format (*i.e.*, downconverting 1080-i to 720-p). *See* Comments of Time-Warner at 5-6.

[46] Adelphia Cable, et. al. urge the Commission to permit cable operators to degrade a 1080-i signal, so long as it is only to a lower HDTV format such as 720-p. By its terms, such a degradation would deny consumers who invest in -- and expect optimum performance from -- 1080-i HDTV receivers from enjoying the full functionality of those products. As such, the Commission should reject this proposal. *See* Comments of Adelphia Cable et. al. at 31.

b. A Rule Requiring Carriage of the Full 6 MHZ DTV Channel, Including PSIP, User Data and Electronic Program Guides, Is Supported by the Record.

Similarly, the record strongly supports the need for the Commission to adopt rules for cable carriage of DTV signals that require, regardless of the must carry obligation effecting their carriage, transmission of the DTV signal's entire 6 MHZ data stream,[47] including all PSIP[48] and program-related services (such as EPGs).[49] The importance of maintaining the integrity of the DTV signal when it is transmitted to a cable customer cannot be overstated. Any alteration or elimination of a broadcasters' PSIP data could introduce an unacceptable level of confusion and complication to the consumers' DTV experience. Similarly, any alteration or elimination of User Data, which is responsible for carrying important closed captioning and emergency data to the DTV receiver, could unacceptably put consumers at risk of losing access to this valuable and, in some instances, life saving information.

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[47] *See* Comments of ALTV at 17; Barry Telecommunications at 5; Broadcast Group at 17; Capitol Broadcasting at 4; CEMA at 8; Chris-Craft/United Group at 4; Circuit City at 6; Cordillera Communications at 4; Corporation for General Trade at 13; Entravision at 10; GemStar/Starsight at 18; Golden Orange Broadcasting at 6; Granite Broadcasting at 9; Harris at 7; KSLS/KHLS at 2; Lee Enterprises at 6; Maranatha Broadcasting at 6; MSTV at 28; MECA at 2; Morgan Murphy and Cosmos Broadcasting at 10; Named State Broadcasters at 5; NAB at 37; National Association for the Deaf at 3; National Datacast at 2; NASA at 2; Paxson at 27; Pegasus Communications at 6; Philips at 2; Public Broadcasters at 44; Retlaw Enterprises at 4; Shockley Communications at 3; Sinclair at Note 5; Sony at 8; Station Representatives Association at 8; UPN Affiliates Association at 4; and Zenith at 2.

[48] *See* Comments of ALTV at 73; Broadcast Group at Note 38; CEMA at 13; Morgan Murphy and Cosmos Broadcasting at 15; MSTV at 34; NAB Attachment G at 7; NBC at 5; Philips at 2; Sony Electronics Inc. at 9; and Station Representatives Association at 8.

[49] *See* Comments of ALTV at 73; Broadcast Group at 16; GemStar/Starsight at 18; MSTV at 37; NBC at 7; Station Representatives Association at 9; and Zenith at 10.

As with material degradation, the cable industry has chosen to remain largely silent on these issues, leaving both consumer electronics manufacturers and broadcasters guessing as to whether cable operators, whether carrying DTV signals pursuant to a must carry obligation or retransmission consent, will carry broadcasters' DTV signals in their entirety, or if they will pick apart or alter the data contained in these signals for their own pecuniary interests. For consumers, this silence only serves to heighten the uncertainty surrounding their ability to access DTV signals and services in as robust and high quality a manner via cable as might be achieved over-the-air. Parents cannot be sure their DTV receiver's "V-chip" will receive the information it needs to activate ratings-based program blocking. Residents in areas hit by severe weather cannot be sure if their DTV receiver, hooked up to cable, will deliver local broadcasters' emergency information and weather warnings. Deaf consumers subscribing to cable cannot be sure that their DTV receiver will display closed captioning information. And no consumer will be confident that they will have access to competitive electronic program guides, particularly those provided by broadcasters.[50/] In light of reports of some cable operators stripping EPGs out of the vertical blanking interval in the NTSC context, this issue assumes heightened importance for the digital era. In a universe with hundreds of channels of programming, EPGs will be integral to

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[50/] Thomson associates itself with those commenters who urge the Commission to define "ancillary and supplementary" services, in the context of DTV (*i.e.*, not qualified for carriage under must carry), as those services for which the subscriber must pay, as opposed to those that are available to consumers free over-the-air, including advertiser-supported services. *See, e.g.*, Comments of ALTV at 69; Broadcast Group at 19; Morgan Murphy and Cosmos Broadcasting at 14; MSTV at 29, Note 77; NAB at 39; National Datacast at 2; Paxson at 27, Note 59; Sony at 8; Station Representatives Association at 8.

consumers' access to DTV services. Cable operators must be precluded from denying consumers the ability to utilize competitive EPGs[51].

In that regard, Thomson is very troubled that certain digital cable set-top boxes apparently do not plan to support the broadcasters' PSIP protocol.[52] The wide scale deployment of such devices puts subscribers at risk of having to search endlessly through the entire channel band for their desired programming, or relying on and paying for proprietary EPGs supplied by the cable operator. Such a Hobson's choice is the antithesis of the consumer-friendly approach to DTV for which the Commission has long strived.

Thomson again urges the Commission to adopt rules in this proceeding that ensure that cable consumers have unimpeded access to broadcasters' DTV signals in their full, unaltered, undegraded form and integrity. Specifically, the Commission should adopt the following set of minimum requirements, either as part of a must carry regime, or as technical standards governing cable retransmission of DTV broadcast signals:

1. A cable operator must make available to its subscribers all DTV signals in the format originally transmitted by the broadcaster, as received at the cable headend. Any downgrading of a DTV signal's video format to one of lesser resolution is expressly prohibited.

2. A cable operator must make available to its subscribers all DTV channels in their entirety, including the maintenance of program-specific information in the PSIP. Any alteration or deletion of any of the other data contained in the 6 MHZ channel, such as User Data and broadcaster-transmitted navigational and program-related information, is expressly prohibited.

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[51] These concerns are set forth at length in the Comments of Gemstar.

[52] *See* Comments of General Instrument at 5-7; *See also* Reply Comments of BellSouth Interactive Media at 5 and Note 18.

V. CONCLUSION

From Thomson's perspective, the record in this proceeding reveals that the transition to DTV is largely on track: broadcasters have begun digital broadcasts in a large number of major markets; DTV receiver manufacturers have begun the introduction of high quality, innovative and fully functional DTVs into the consumer marketplace; and in the near future cable operators will begin delivery of HDTV programming (either pursuant to retransmission agreements with individual broadcasters, or a must carry obligation) to their subscribers. However, the record also reveals the need for Commission action to ensure the continued and ultimate success of the DTV transition.

The Commission should follow a transitional approach to ensure cable compatibility with DTV signals. This approach needs to include a requirement that cable operators provide, in some fashion, an 8 VSB output of all DTV signals for input to a DTV receiver. Notwithstanding the viability of cable-delivered 8 VSB output, the Commission should continue to promote the industry's formal adoption of transparent, cooperatively-developed standards for cable-ready DTV receivers. While the recently adopted IEEE 1394 standard may prove to be an effective temporary measure, once there is agreement on a copy protection scheme, it is not a substitute for the cable-ready DTV receiver solution.

Finally, and above all, Thomson urges the Commission to adopt minimum technical and operational protocols that ensure that every cable consumer is able to access and enjoy the full benefits of DTV. Specifically, the Commission should mandate that all digital broadcast signals that are carried over cable are delivered to the cable consumer without material degradation of any kind. This prohibition against degradation must expressly forbid: (1) any down conversion of

HDTV video formats to formats of lower or standard resolution; and (2) any removal of any portion of the broadcaster's bitstream, including, PSIP, user data, and program related EPG information.

By accepting these recommendations, the Commission can ensure a smooth, efficient, and consumer-driven transition to digital television.

Respectfully submitted,

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December 22, 1998